REMARKS

Applicants respectfully request reconsideration and allowance of the above-identified patent application. By this amendment, claims 1, 3-19, 21-29, and 31 remain pending, wherein claims 1, 3, 23, and 29 have been amended. Of the pending claims, the independent claims include the computer program product of claim 1, the method of claim 23, and the computing system of claim 29.[1]

Initially, Applicants and Applicants' Attorney express appreciation to the Examiner for the telephonic interview recently held on June 5, 2007. The foregoing amendments and following arguments are consistent with those presented and discussed during the interview.

Applicants also note with appreciation the Examiner's withdrawal of the previous grounds of rejection.

In the Office action, claims 1 and 3 are objected to for various informalities. Applicants respectfully note that these claims have been amended in order to address those concerns raised by the Examiner. Accordingly, Applicants respectfully request withdrawal of these grounds of objections.

Further, the Office action rejects the independent claims under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,799,258 to Linde ("Linde") in view of U.S. Patent Application Publication No. 2003/0167439 to Talagala et al. ("Talagala"). The remaining dependent claims are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable Linde in view of Talagala or combining Linde and Talagal with one or more of the following: U.S. Patent No. 6,014,669 to Slaughter et al. ("Slaughter"), U.S. Patent No. 6,981,114 to Wu et al. ("Wu"), or U.S. Patent No. 6,377,958 to Orcutt ("Orcutt").[2] Applicants respectfully traverse these grounds of rejection.

As previously stated, Applicants' invention generally relates to storage verification. Embodiments overcome the deficiencies and drawbacks of current read-only integrity checks of a live volume by providing a shadow copy of the live volume, which can then be used to perform the diagnostic analysis. Note that the shadow copy is created in response receiving a request to

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[1] Support for the claim amendments can be found throughout the specification; for example, support may be found in the first full paragraph on page 20.

[2] Although the prior art status of the cited art is not being challenged at this time, Applicants reserve the right to challenge the prior art status of the cited art at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of the cited art.

run a verification tool on the live volume and provides a logical duplication of the live volume at a point in time, which can then be examined for errors. Further, the shadow copy is divided into several blocks. When a request for information in the shadow copy is received, a check is performed to determine if a block in the original volume has changed, wherein if it has not changed then data from the original volume is used for the integrity check, and wherein if it has changed then data is retrieved and used for the integrity check from a previous version of the block that was stored before the data changed. Once all the blocks have been checked, a report can then be generated, wherein if errors are found, the administrator can take the volume off-line to run the appropriate fixing utility. Note that because a shadow copy is used for the integrity verification, it is not subject to change, but users can still access the live volume during the integrity check.

Claim 1 is directed toward some of the embodiments identified above and recites a computer program product configured to implement a method of ensuring against false error reporting during an online verification process by finding errors in a shadow copy of the live volume. The computer program product configured to first receive a request to run a verification tool on a live volume in order to determine if errors exist thereon. Based on the received request, shadow copy of the live volume can be created, which provides a logical duplicate of the live volume at a point in time. Note that the live volume is divided into a plurality of blocks. The shadow copy is then examined to verify integrity of the live volume, wherein the shadow copy does not change during examination, but users still have access to the live volume during the integrity verification. More specifically, the examination process first receives a request for examining each of the plurality of blocks in the shadow copy. Then it is determined if at least one block has changed in the live volume since the creation of the shadow copy. If at least one block has not changed, data for the plurality of blocks are retrieved and returned from the live volume. Otherwise, if at least one block has changed an unchanged version of the at least one block is retrieved and returned from a storage location where the at least one block was copied before it changed. Based on the determination of whether or not the at least one block has changed, the plurality of blocks are examined to verify an integrity of the live volume. Further, based on the examination of the shadow copy, a report on the integrity of the live volume is generated, which indicates to a user that error(s) were found and that the live volume should be

taken off-line in order to fix the error(s). Claims 23 and 29 recite a method and computer system with elements similar to those described above with regards to claim 1.

Applicants respectfully submit that the cited art fails to anticipate or make obvious the claimed invention. In particular, the cited alleged prior art does not disclose, suggest, or enable each and every element of Applicants' claimed invention. For example, the combination of *Linde*, *Talagala*, *Slaughter*, *Wu*, and/or *Orcutt*—taken either individually, or as a whole—does not disclose or suggest receiving a request to run a verification tool on a live volume; based on the received request, creating a shadow copy of the live volume, which provides a logical duplicate of the live volume at a point in time, and wherein the shadow copy is divided into a plurality of blocks; examining the shadow copy to verify integrity of the live volume, wherein the shadow copy does not change during examination, but users still have access to the live volume during the integrity verification, wherein examination of the shadow copy can cause the distributed computing system to further perform the following: receive a request for examining each of the plurality of blocks in the shadow copy; determine if at least one block has changed in the live volume since the creation of the shadow copy, wherein if at least one block has not changed data for the plurality of blocks are retrieved and returned from the live volume, and wherein if at least one block has changed an unchanged version of the at least one block is retrieved and returned from a storage location where the at least one block was copied before it changed; and based on the determination of whether or not the at least one block has changed, examine the plurality of blocks to verify an integrity of the live volume; and based on the examination of the shadow copy, generating a report on the integrity of the live volume, which indicates to a user that error(s) were found and that the live volume should be taken off-line in order to fix the error(s), as recited, *inter alia*, in claims 1, 23, and 29.

As discussed and agreed to during the interview, the Examiner acknowledged that the proposed claim amendments overcome the art of record. Accordingly, Applicants respectfully submit that the combination of *Linde*, *Talagala*, *Slaughter*, *Wu*, and/or *Orcutt*—taken either individually—does not disclose, suggest, or enable each and every element of Applicants' claims 1, 23, and 29.

Based on at least the foregoing reasons, Applicants respectfully submit that the cited prior art fails to anticipate or make obvious Applicants' invention, as claimed for example, in independent claims 1, 23, and 29. Applicants note for the record that the remarks above render

the remaining rejections of record for the independent and dependent claims moot, and thus addressing individual rejections or assertion with respect to the teachings of the cited art is unnecessary at the present time, but may be undertaken in the future if necessary or desirable, and Applicants reserve the right to do so.

All objections and rejections having been addressed, Applicants respectfully submit that the present application is in condition for allowance, and notice to this effect is earnestly solicited. Should any question arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that he be contacted at +1.801.533.9800.

Dated this 20th day of June, 2007.

Respectfully submitted,

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